Title: INDUSTRIAL CONTROLLER AUTOMATION INTERFACE
Inventor(s): McKelvey, *et al.*
Serial No. 09/928,623
Docket No. 01SW100

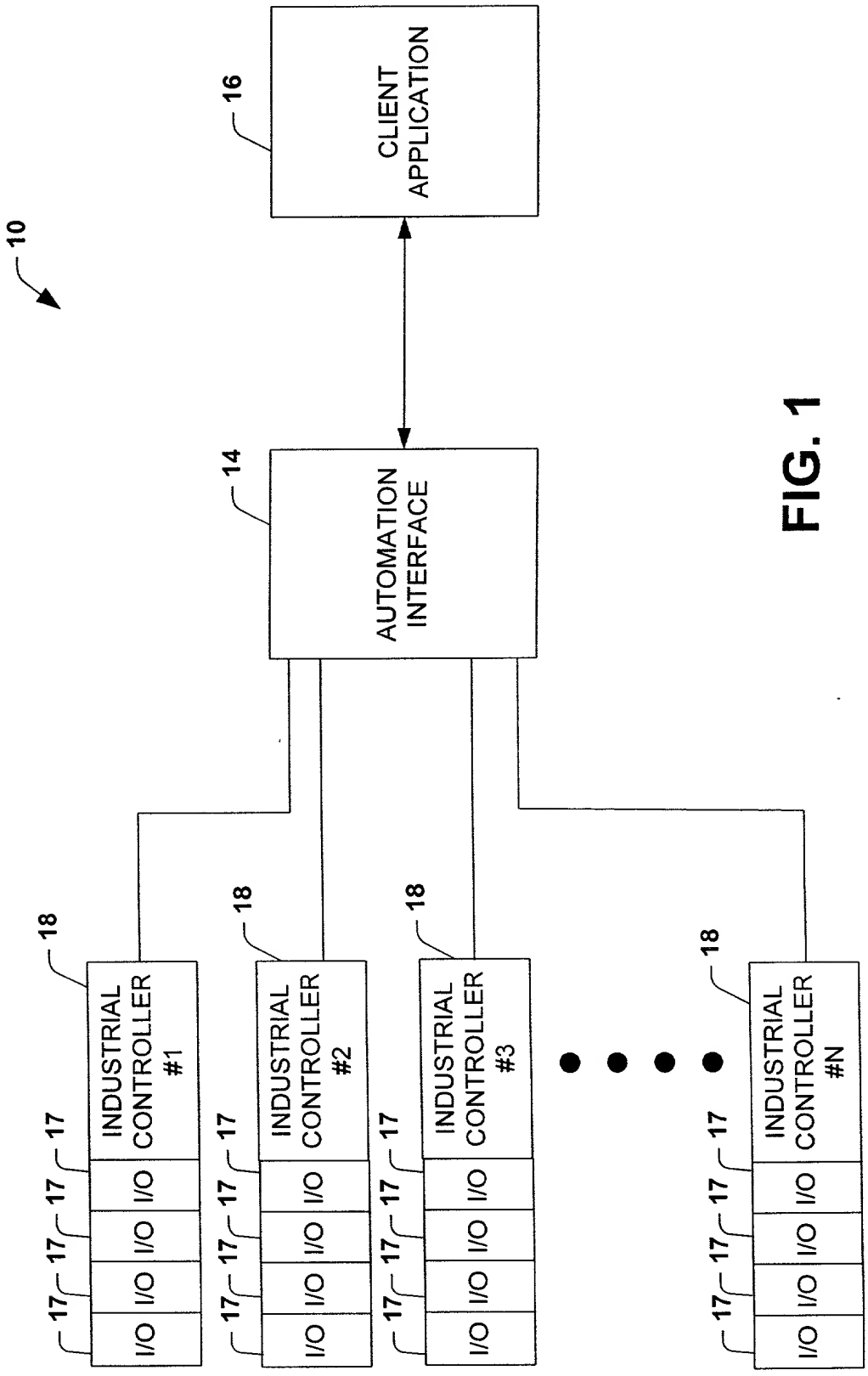

FIG. 1

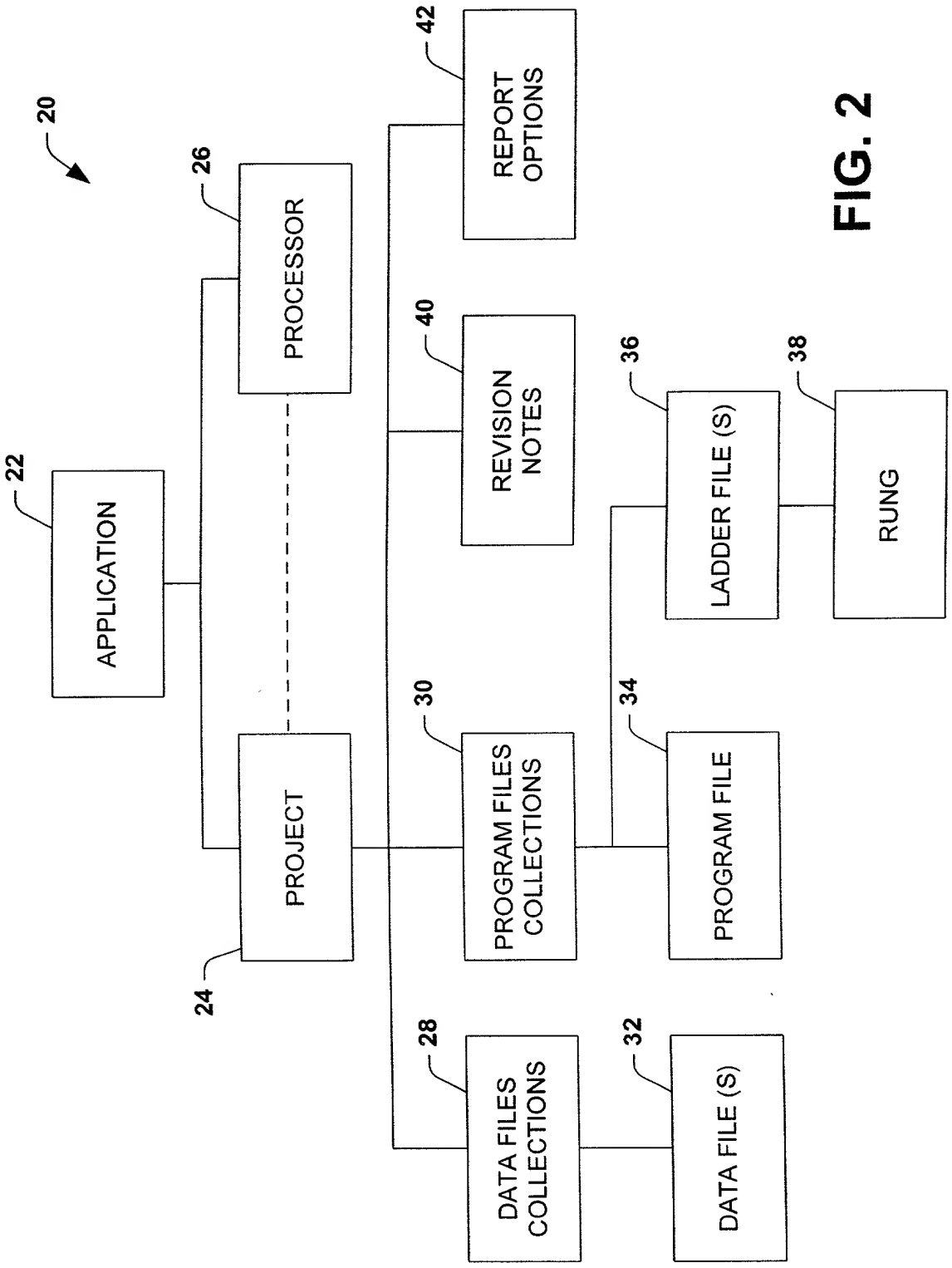
20
22
APPLICATION
24
PROJECT
26
PROCESSOR
28
DATA FILES COLLECTIONS
30
PROGRAM FILES COLLECTIONS
32
DATA FILE (S)
34
PROGRAM FILE
36
LADDER FILE (S)
38
RUNG
40
REVISION NOTES
42
REPORT OPTIONS

FIG. 2

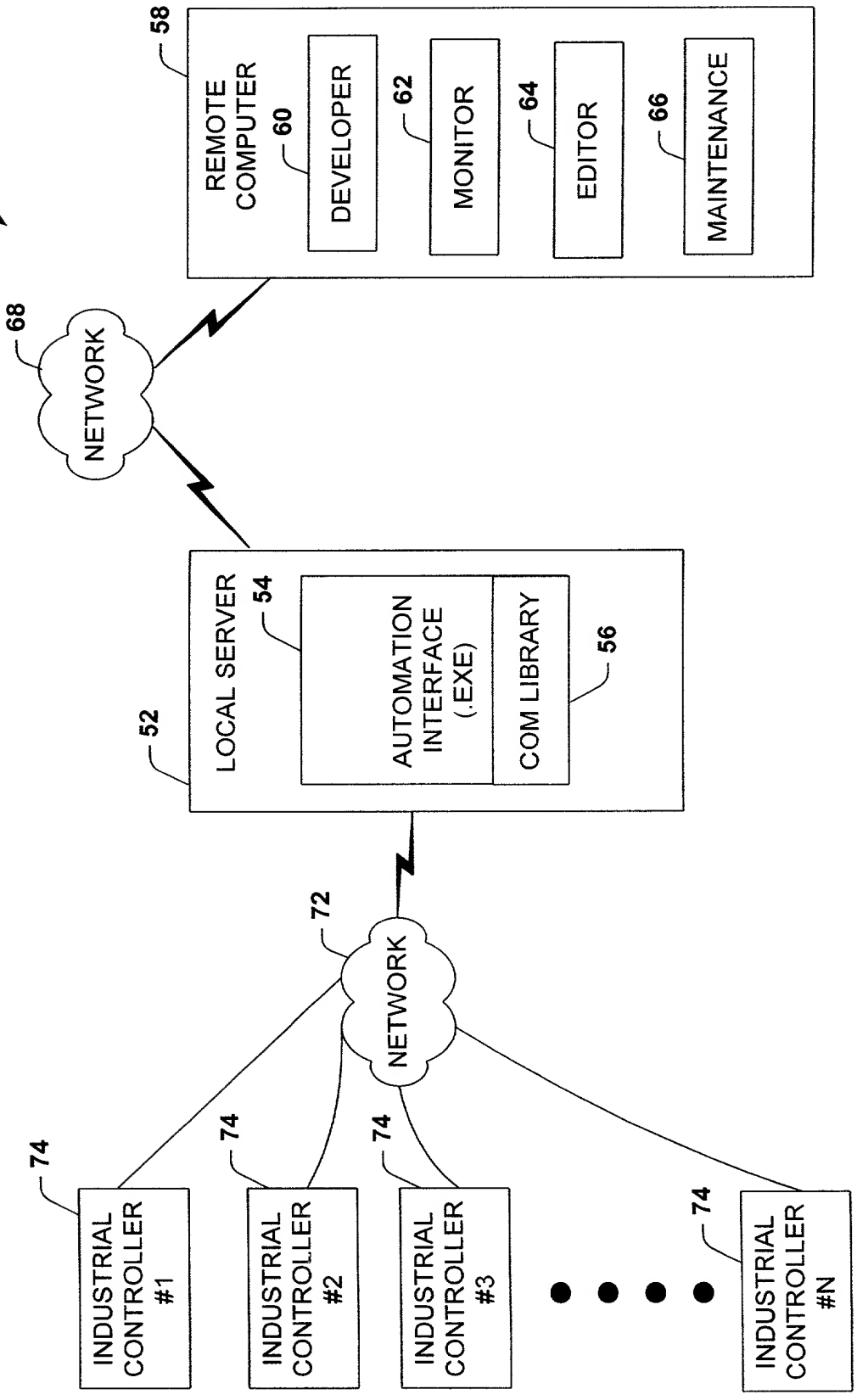
50
58
REMOTE COMPUTER
60
DEVELOPER
62
MONITOR
64
EDITOR
66
MAINTENANCE
68
NETWORK
LOCAL SERVER
52
54
AUTOMATION INTERFACE (.EXE)
COM LIBRARY
56
72
NETWORK
74
INDUSTRIAL CONTROLLER #1
74
INDUSTRIAL CONTROLLER #2
74
INDUSTRIAL CONTROLLER #3
74
INDUSTRIAL CONTROLLER #N

FIG. 3

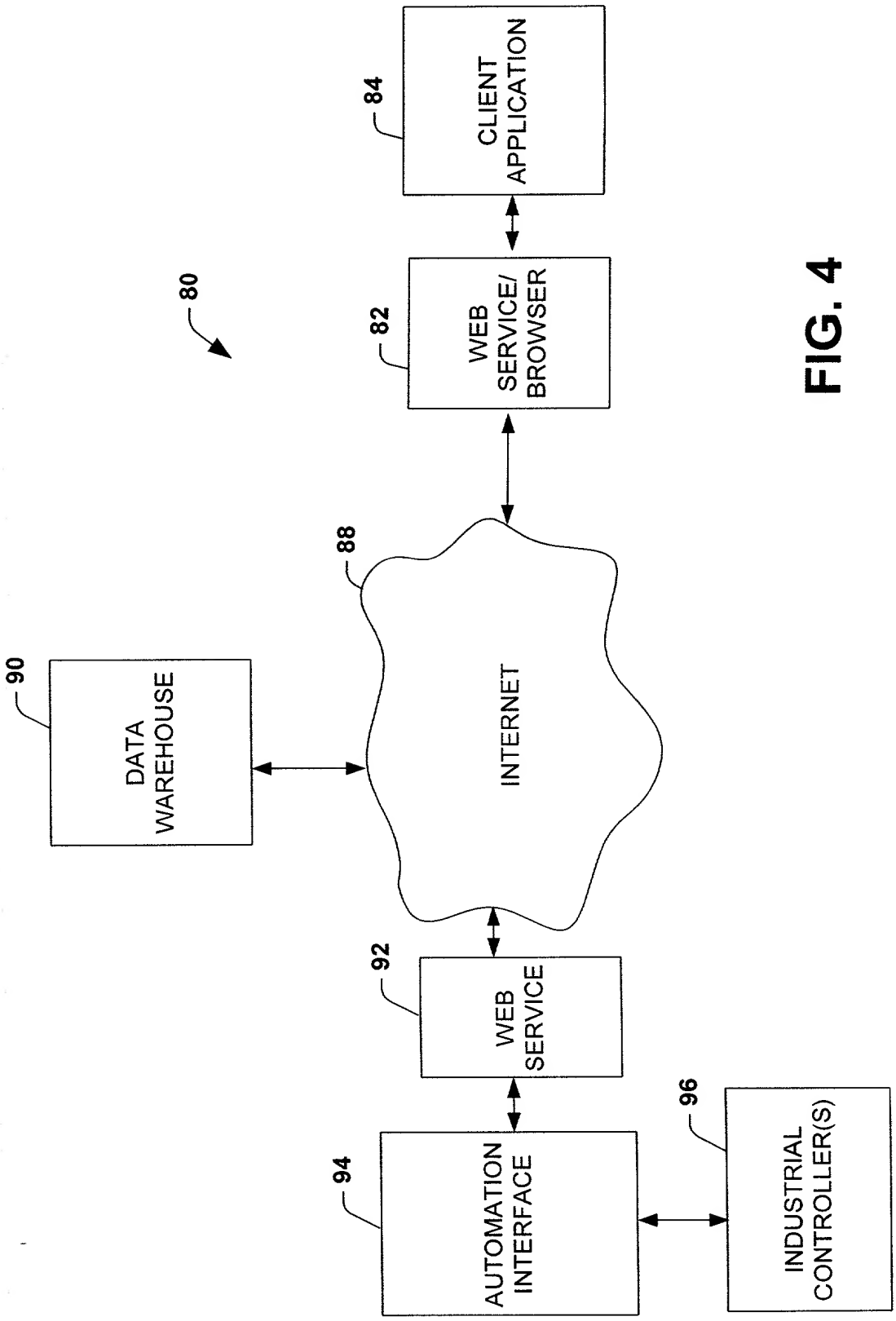
80
84
CLIENT APPLICATION
82
WEB SERVICE/ BROWSER
88
INTERNET
90
DATA WAREHOUSE
92
WEB SERVICE
94
AUTOMATION INTERFACE
96
INDUSTRIAL CONTROLLER(S)

FIG. 4

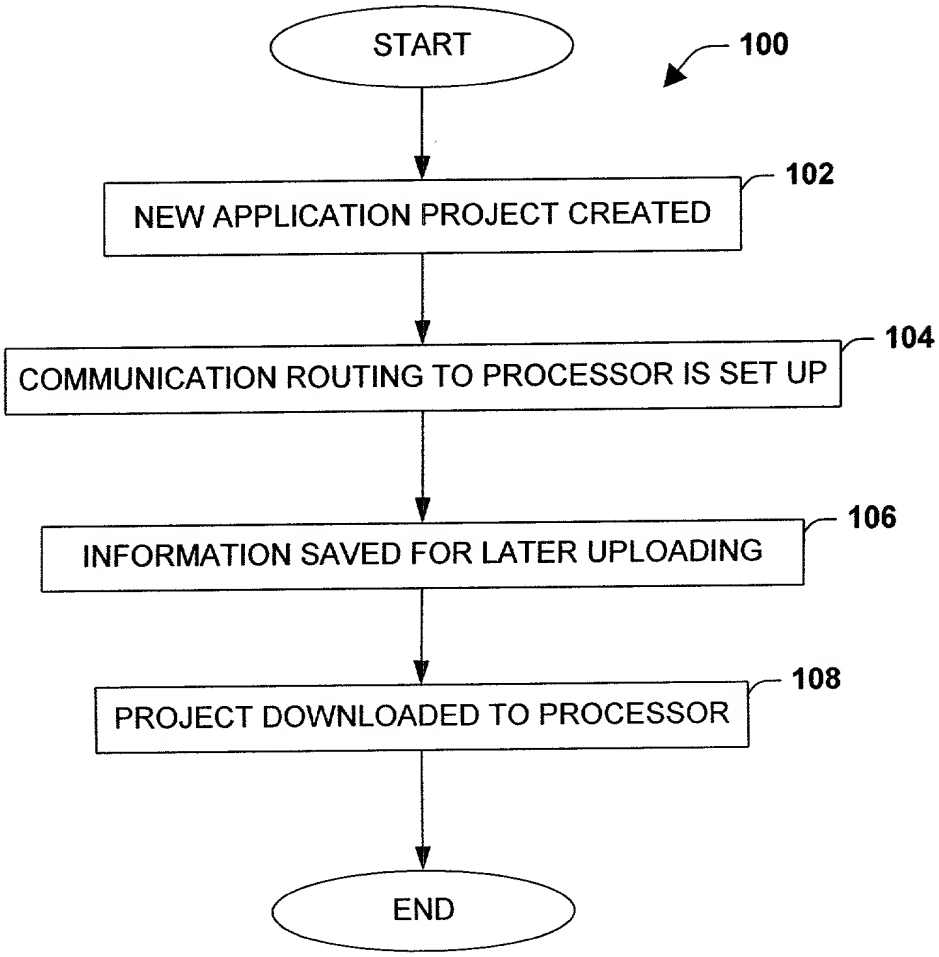
START
100
NEW APPLICATION PROJECT CREATED
102
COMMUNICATION ROUTING TO PROCESSOR IS SET UP
104
INFORMATION SAVED FOR LATER UPLOADING
106
PROJECT DOWNLOADED TO PROCESSOR
108
END

FIG. 5

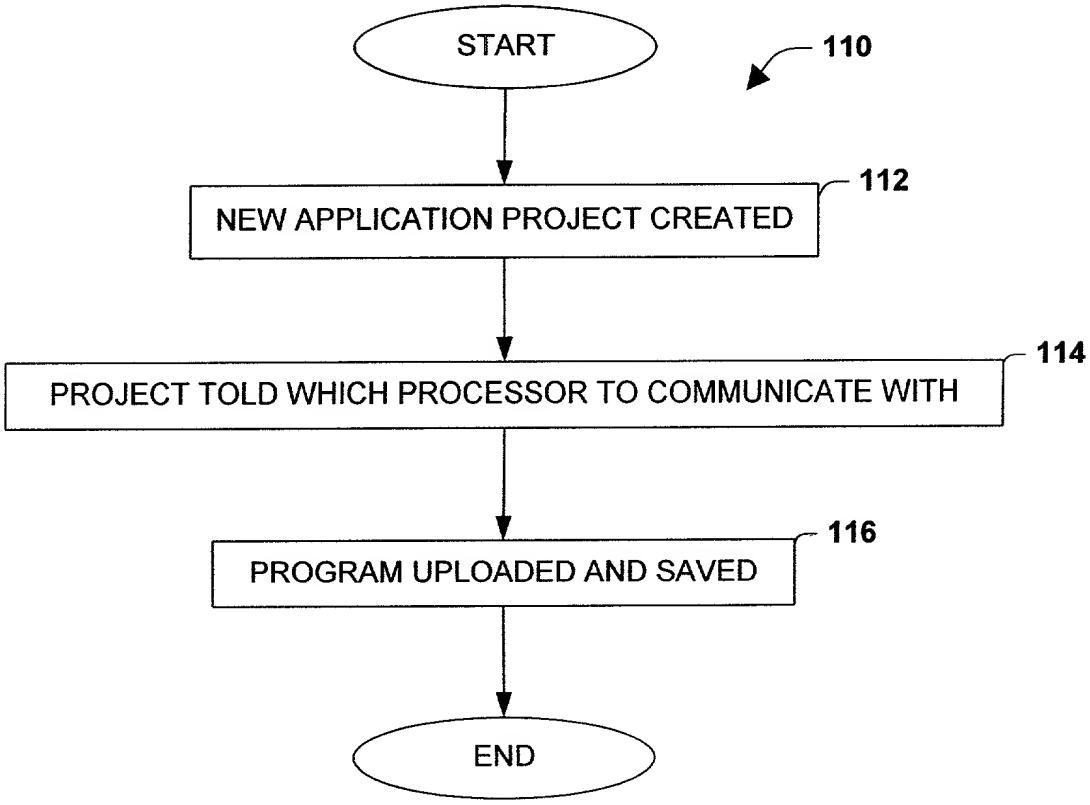
START
110
NEW APPLICATION PROJECT CREATED
112
PROJECT TOLD WHICH PROCESSOR TO COMMUNICATE WITH
114
PROGRAM UPLOADED AND SAVED
116
END

FIG. 6

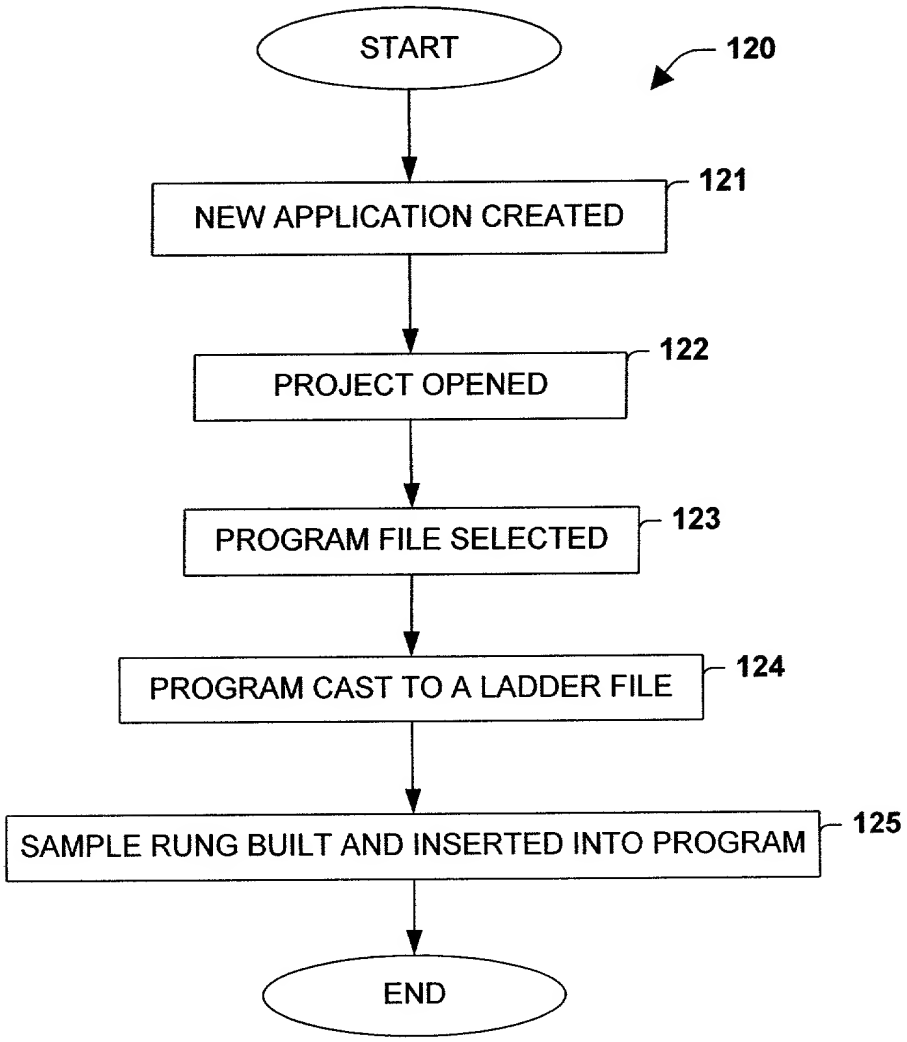
START
120
NEW APPLICATION CREATED
121
PROJECT OPENED
122
PROGRAM FILE SELECTED
123
PROGRAM CAST TO A LADDER FILE
124
SAMPLE RUNG BUILT AND INSERTED INTO PROGRAM
125
END

FIG. 7

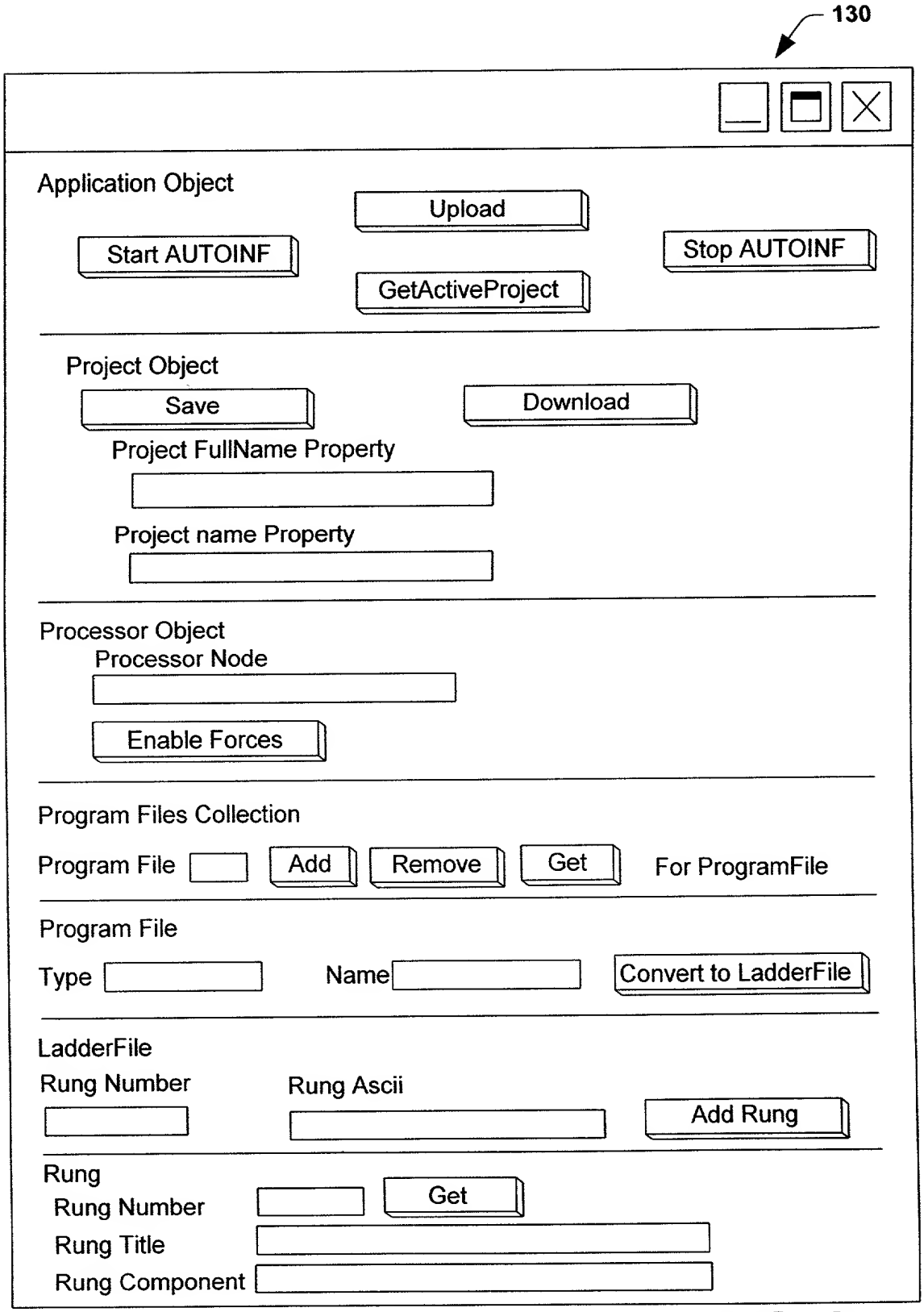
130
Application Object
Upload
Start AUTOINF
Stop AUTOINF
GetActiveProject
Project Object
Save
Download
Project FullName Property
Project name Property
Processor Object
Processor Node
Enable Forces
Program Files Collection
Program File
Add
Remove
Get
For ProgramFile
Program File
Type
Name
Convert to LadderFile
LadderFile
Rung Number
Rung Ascii
Add Rung
Rung
Rung Number
Get
Rung Title
Rung Component

FIG. 8

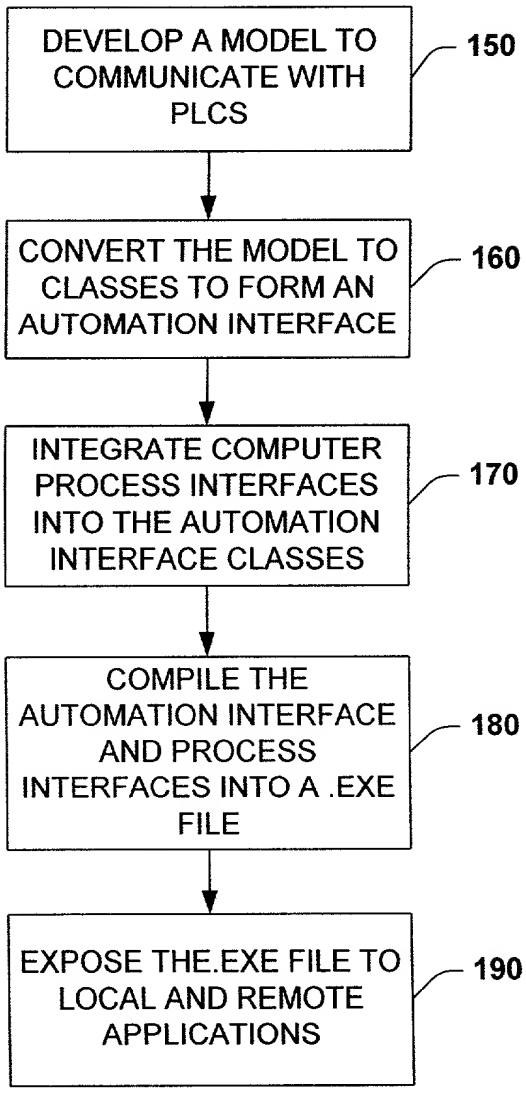
DEVELOP A MODEL TO COMMUNICATE WITH PLCS
150
CONVERT THE MODEL TO CLASSES TO FORM AN AUTOMATION INTERFACE
160
INTEGRATE COMPUTER PROCESS INTERFACES INTO THE AUTOMATION INTERFACE CLASSES
170
COMPILE THE AUTOMATION INTERFACE AND PROCESS INTERFACES INTO A .EXE FILE
180
EXPOSE THE.EXE FILE TO LOCAL AND REMOTE APPLICATIONS
190

FIG. 9

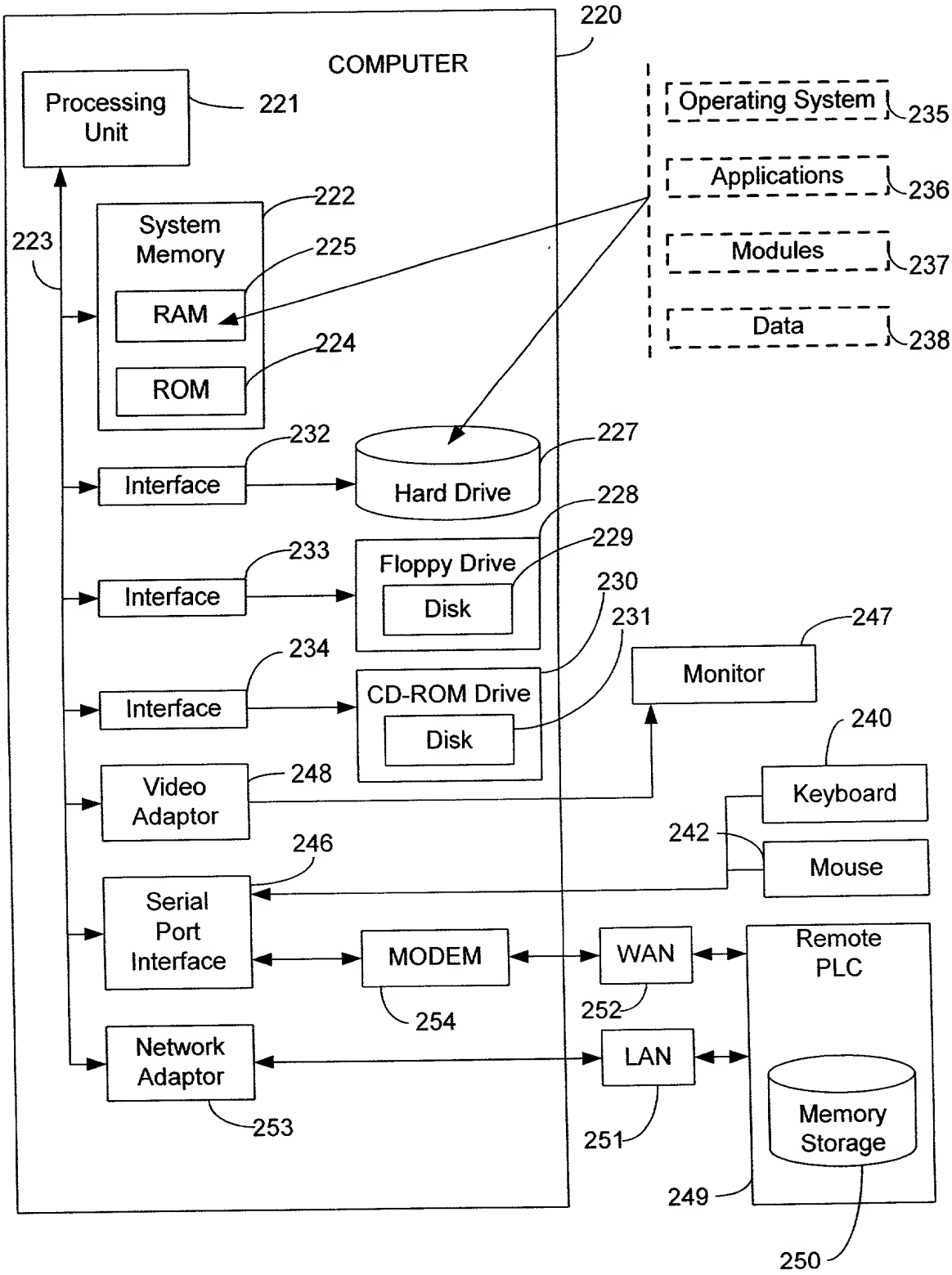
220
COMPUTER
Processing Unit
221
Operating System
235
Applications
236
Modules
237
Data
238
222
System Memory
223
225
RAM
224
ROM
232
Interface
Hard Drive
227
228
229
Floppy Drive
Disk
233
Interface
230
231
CD-ROM Drive
Disk
234
Interface
247
Monitor
240
Keyboard
242
Mouse
248
Video Adaptor
246
Serial Port Interface
MODEM
254
WAN
252
Remote PLC
Network Adaptor
253
LAN
251
Memory Storage
249
250

FIG. 10